CLAIMS:

1. A method of generating authentication data for authenticating a physical object; the method including:

measuring a property set *Y* of the object using a measurement procedure;

creating a property set *I* from the measured property set *Y* that meet a predetermined robustness criterion;

creating a property set *A* from the property set *I* that includes less information on the actual properties than property set *Y*;

generating a control value *V* in dependence on properties of the property set *A* and inserting the control value in the authentication data.

2. A method as claimed in claim 1, wherein the step of creating the property set *A* includes performing a contracting transformation.

3. A method as claimed in claim 2, wherein the contracting transformation transforms a property to a binary number representative of a sign of the property.

4. A method as claimed in claim 1, wherein the step of creating the property set *A* includes selecting a subset of the property set *I*.

5. A method as claimed in claim 4, including creating helper data *W* for controlling the selection of the subset and inserting the helper data *W* in the authentication data.

6. A method as claimed in claim 5, including creating unique helper data W for respective authentication applications.

7. A method as described in claim 1, wherein the predetermined robustness criterion is based on a signal to noise ratio of the measured properties and the step of creating the property set *I* includes performing a transformation *Γ* on the property set *Y* to create

disjunct property sets I_1 and I_2 where a signal to noise ratio of properties of I_1 are estimated to be higher than a signal to noise ratio of properties of I_2; and using I_1 as the property set I.

8. A method as claimed in claim 7, wherein the transformation Γ is a linear transformation that converts a vector representing the property set Y to a vector with components α_i representing the set I, where each vector component α_i is independent of the other vector components α_j ($j \neq i$) and wherein the vector components are sorted according to an estimated signal to noise ratio.

9. A method as claimed in claim 7, including the step of creating the transformation Γ in dependence on a statistical property of the measurement procedure.

10. A method as claimed in claim 9, wherein the statistical property includes a covariance matrix derived from estimated properties X of the object and a corresponding statistical distribution F.

11. A method as claimed in claim 7, including deriving a threshold from a noise level in the measured property set and assigning created properties with an absolute value larger than the threshold to set I_1.

12. A method as claimed in claim 1, wherein the step of creating the control value V includes performing a cryptographic function on properties of the property set A.

13. A method as claimed in claim 12, wherein the cryptographic function is a one-way function.

14. A computer program product operative to cause a processor to perform the method of claim 1.

15. A method of authenticating a physical object; the method including:

measuring a property set Y of the object using a measurement procedure;

creating a property set I from the measured property set Y that meet a predetermined robustness criterion;

creating a property set A from the property set I that includes less information on the actual properties than property set Y;

generating a control value V' in dependence on properties of the property set A,

retrieving a control value V that has been generated for the physical object during an enrolment; and

authenticating the physical object if there is a predetermined correspondence between the generating a control value V' and the retrieved control value V.

16. A computer program product operative to cause a processor to perform the method of claim 15.

17. A system (100) for authenticating a physical object (105); the system including an enrolment device (110), an authentication device (140), and a storage (130) for storing authentication data;

the enrolment device (110) including:

an input (112) for receiving a property set Y of the object measured using a measurement procedure;

a processor (114) for creating a property set I from the measured property set Y that meet a predetermined robustness criterion; creating a property set A from the property set I that includes less information on the actual properties than property set Y; and generating a control value V in dependence on properties of the property set A; and

an output (116) for supplying the control value to the storage as part of the authentication data; and

the authentication device (120) including:

an input (142) for receiving a property set Y of the object measured using a measurement procedure and for receiving a control value V from the storage;

a processor (144) for creating a property set I from the measured property set Y that meet a predetermined robustness criterion; for creating a property set A from the property set I that includes less information on the actual properties than property set Y; for generating a control value V' in dependence on properties of the property set A; and for authenticating the physical object if there is a predetermined correspondence between the generating a control value V' and the retrieved control value V; and an output (146) for issuing a signal indicating whether or not the physical object has been authenticated.

18. An authentication device (140) for use in a system as claimed in claim 17; the authentication device including:

an input (142) for receiving a property set *Y* of a physical object measured using a measurement procedure and for receiving a control value *V* from a storage;

a processor (144) for creating a property set *I* from the measured property set *Y* that meet a predetermined robustness criterion; for creating a property set *A* from the property set *I* that includes less information on the actual properties than property set *Y*; for generating a control value *V'* in dependence on properties of the property set *A*; and for authenticating the physical object if there is a predetermined correspondence between the generating a control value *V'* and the retrieved control value *V*; and

an output (146) for issuing a signal indicating whether or not the physical object has been authenticated.